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ABSTRACT

This report describes the process of development of training for agricultural research, teaching, and extension professionals in how to use the Fast Agricultural Communications Terminal (FACTS) computer network at Purdue University (Indiana), which is currently being upgraded in order to utilize the latest computer technology. The FACTS system is designed to provide cost-effective and timely communication among extension workers throughout the state of Indiana and specialists on the university campus; provide county extension offices with a tool for local data management; and extend the teaching potential of extension specialists through the development of educational and problem-solving software. A primary objective of this project is to establish an approach to training development that will be successful with this end-user audience. The following phases of the development process are described in this report: (1) determine present and future computer automation requirements and training needs; (2) state overall goals of training and create training plan; (3) communicate results of needs survey and training priorities; (4) establish Project Review Panels for training projects; (5) analyze content for training and define objectives with panel; (6) design the training; and (7) implement computer training. A flowchart of the development process and a list of potential pitfalls in developing training are included. (MES)

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Design & Delivery of Training for a State-wide Data Communication Network

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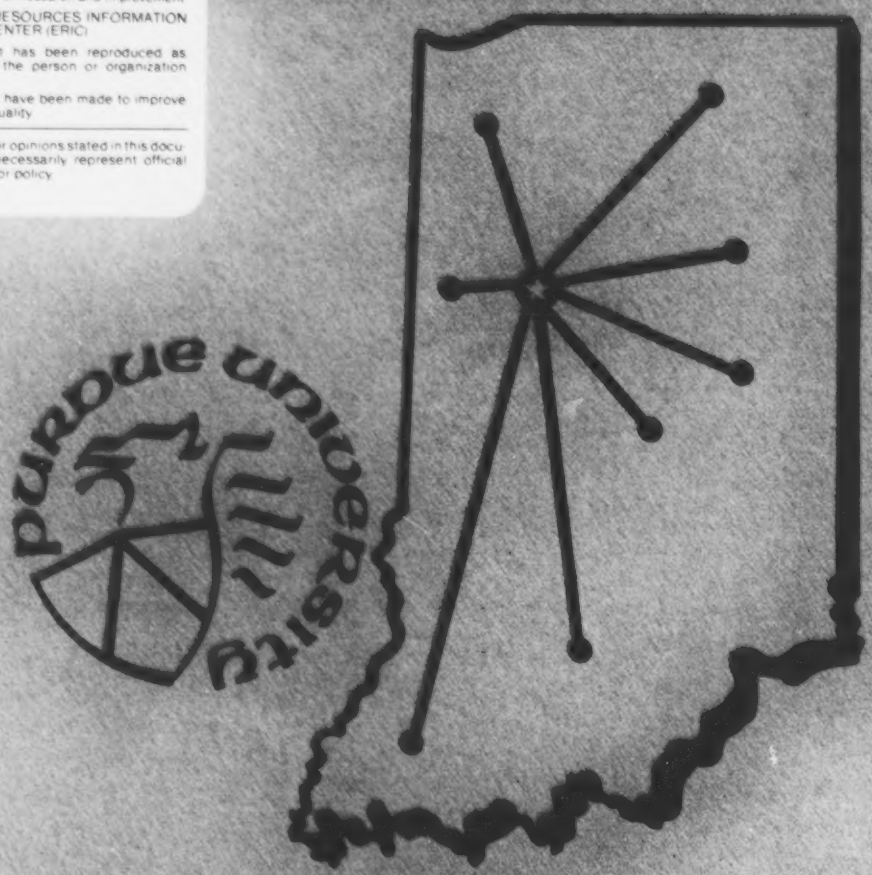

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PLANNING THE DESIGN OF TRAINING FOR A STATE-WIDE DATA COMMUNICATIONS NETWORK

BACKGROUND

Since the 1950's, the Purdue agricultural complex has utilized computers. These computers were dumb terminals and primarily used for agricultural research. A new phase of computer technology occurred in the late 1960's and early 1970's with the adaption of the intelligent terminal to agricultural research. This system had its genesis in Project MIRACLE, which received its initial funding support from the National Science Foundation in 1971. The MIRACLE facilities included a data collector computer linked to laboratory instruments and two timesharing systems. The timesharing systems were networked to PUCC(Purdue University Computer Center), and provided file transfer capabilities for researchers who needed access to mainframe computing resources.

A five year project(1976-1981) was funded with major funding support from the Kellog Foundation to develop and implement the FACTS computer network (Fast Agricultural Communications Terminal. This computer project incorporated the State Extension Service and delivered computer power to all 92 counties throughout the state of Indiana. The FACTS project had three objectives, namely:

* to provide a means of timely and cost-effective communication among Extension agents in the field and Specialists at the university campus.
* to provide the County Extension offices with a tool for local data management.
* to extend Extension Specialists' teaching potential through the development of educational and problem-solving software.

Now in the 1980's, the system is being upgraded again in order to utilize the latest computer technology. A hardware committee recommended the following requirements for this new upgrade:

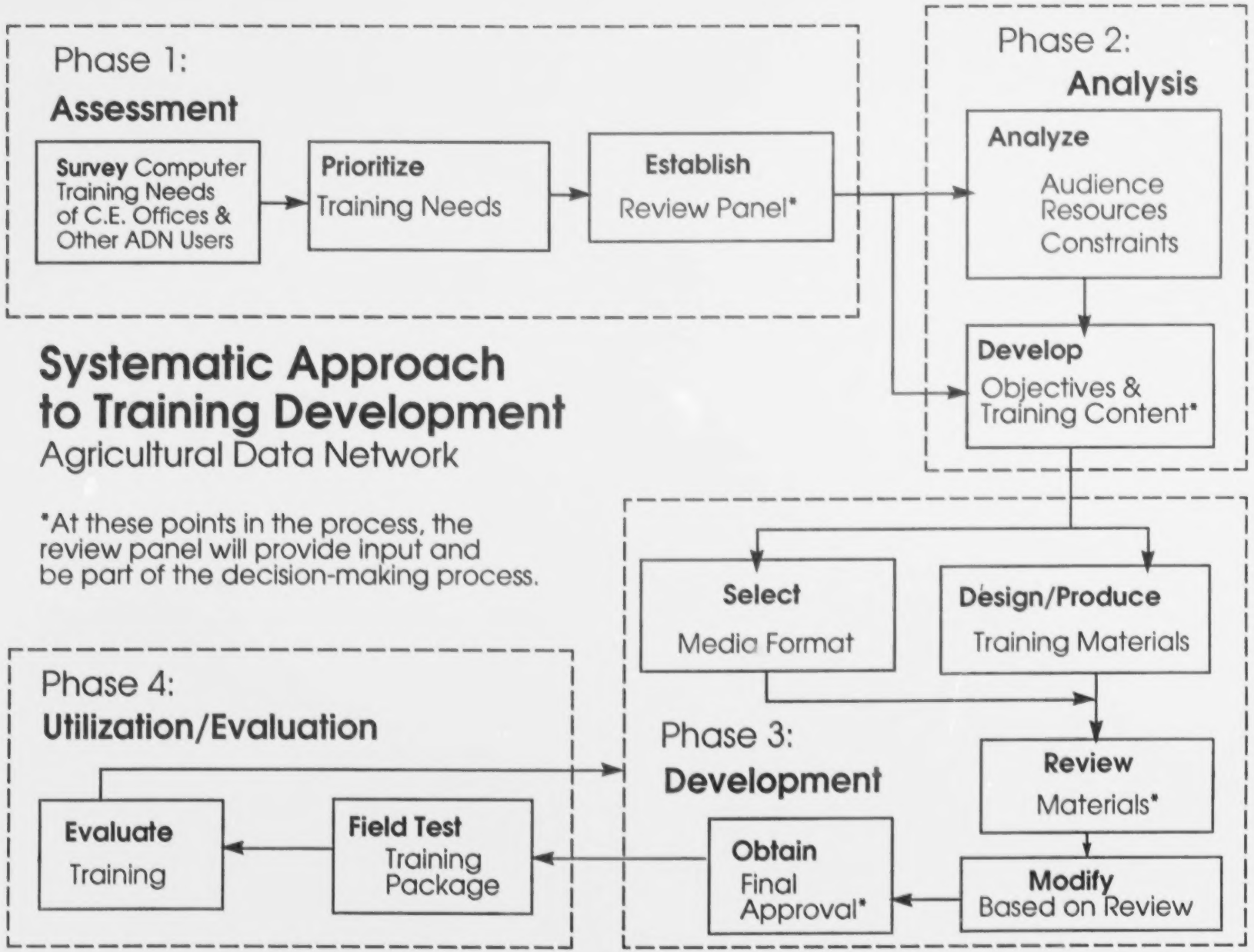
* a multi-user, multi-tasking system
* a configured system with a minimum of 512 Kb of physical memory and 20 Mb of disk storage
* UNIX or UNIX-derived operating system
* a C language compiler
* support for full-duplex operation and an error-correcting protocol for data communications.

However, the need also became apparent with the old system and now with the new upgrade that although great pains were taken to design a system based on human factor engineering, it still required training to get it implemented and used smoothly. Consequently, the Purdue Agricultural Computing Committee also recommended the creation of the position of ADN Training Coordinator and a concerted effort to deliver meaningful training experiences to the three agricultural areas of research, teaching, and extension.

A primary objective of this new position was to establish an approach to training development that would succeed with the end-user audience. This audience is composed of academic and extension staff throughout the state of Indiana. The other major goal of this position was to implement training on the new UNIX system and its applications.

DEVELOPMENT OF THE TRAINING APPROACH

The training development model emphasizes a systems approach with the establishment of project review panels composed of agricultural administrators, computer programmers, end-users and training personnel. The team provides needed input into the development of training on the new computer system as well as on the existing one. The attached flowchart illustrates the developmental phases ADN works through in order to deliver training to its diverse audience.


Phase 1:
Assessment
Survey Computer Training Needs of C.E. Offices & Other ADN Users
Prioritize Training Needs
Establish Review Panel*
Phase 2:
Analysis
Analyze Audience Resources Constraints
Develop Objectives & Training Content*
Systematic Approach to Training Development
Agricultural Data Network
*At these points in the process, the review panel will provide input and be part of the decision-making process.
Select Media Format
Design/Produce Training Materials
Phase 3:
Development
Review Materials*
Modify Based on Review
Obtain Final Approval*
Phase 4:
Utilization/Evaluation
Field Test Training Package
Evaluate Training

TYPE OF UPGRADE COMPUTER SYSTEM IN USE IN THE PURDUE UNIVERSITY COOPERATIVE EXTENSION SERVICE

* Multi-vendor, multi-user systems

  Vendors represented include: AT&T, NCR, Motorola, and Sperry

* Operating system - UNIX

* State-wide electronic communications

* Consistent software for database management and spreadsheet applications

* Non-consistency for office automation packages

COMPOSITION OF PROJECT REVIEW PANELS

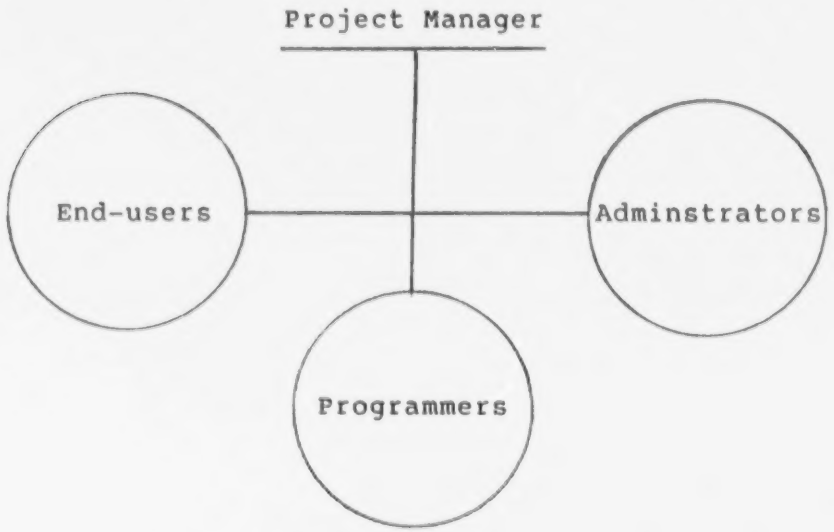
* Training Coordinator/staff - project manager/facilitator and developer

* State Extension Agents - 1 to 3 individuals

* State Extension secretaries - 1 to 2 individuals

* ADN Advisory Committee member and/or Ag. Extension Administrators - 1

* Computer programmers - 1 to 2 individuals



zacher - 3

TRAINING DEVELOPMENT PHASES

1. Determine present and future computer automation requirements and training needs

    * Conduct needs survey to identify gaps
    * Determine what is versus what needs to be
    * Develop long range planning for training

2. State overall goals of ADN training and create training plan

    * Establish training priorities
    * Include training goals for all levels of personnel
    * Obtain management committment to training goals

3. Communicate results of needs survey and training priorities
    * All concerned individuals and potential trainees need to receive periodic updates on training status

4. Establish Project Review Panels for training projects

    * Coordinate meeting times with selected members throughout the state
    * Provide panel with preliminary information for meetings

5. Analyze content for training and define objectives with panel

    * Identify audience
    * Establish logical sequence to topics
    * Identify resources available along with constraints
    * After meetings, send a summary of training notes to panel members to insure consistency

6. Design the training

    * Develop computer training and evaluation based on panel input
    * Perform formative evaluations with panel and other relevant individuals
    * Produce training materials
    * Schedule trainees
    * Keep training records

7. Implement computer training

    * Conduct trainee evaluation and follow-up evaluation.
    * Identify areas for modification.
    * Maintain training materials

zacher - 4

POTENTIAL PITFALLS IN TRAINING DEVELOPMENT

1. Lack of input from all skill levels.
2. Lack of communications on training progress to panel.
3. Incorrect identification of the problem to be solved and desired end results.
4. Not anticipating shifting training needs.
5. Too rigid of a training plan to allow for shifting needs.
6. Too narrow of an audience focus.
7. Lack of management committment.
8. Media selection tempered with an eye toward cost-effectiveness, quality and timeliness of delivery.
9. Ineffective evaluation schemes. Evaluation and content do not coincide.
10. Lack of follow-up evaluation or interest in how trainees are applying new skills.